

Critical evaluation of bandage alternative characteristics: a case series

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Aim

- VELCRO® adjustable wraps are an alternative to compression bandages to manage leg edema
- Clinical evidence supports the positive impact on wound healing
- There is little focus in the literature with regards to matching product to patient presentation and ability to utilize the device
- Case series to demonstrate that although each product produced therapeutic pressures, there were variations in functional performance between patients



Product A



Product B



Product C



Product D

At time of publication, VELCRO® adjustable wraps covered by Federal insurance in presence of open wound were reviewed



Product E

Method

- The five VELCRO® adjustable wraps covered by federal insurance plans available at the time of the case series were reviewed
- Resting and working pressures for each device were measured on normal volunteer
- Different patients who previously utilized traditional compression bandages were issued products and instructed with application/use
- Performance of each device was documented

Product Characteristics

Device ID**	Application Method	Sizes Available Circumference (cm) Min/Max ankle Min/Max Calf	Foot coverage
A	overlapping	S M L XL XXL Lengths: Avg/Tall Ankle 18/38 Calf 28/68 *extender piece available	Available but not included Comes with liner
B	interlacing	S M L XL XXL Full calf M L XL Lengths: short/long Ankle 19/42 Calf 26/64	Circular knit anklet and separate liner included
C	interlacing	S M L XL XXL Lengths: Reg/Tall	Available but not included Comes with liner
D	overlapping	XS S M L XL Lengths: Reg/ Tall Ankle : 21/50 Calf: 36/68	Available but not included Comes with liner
E	interlacing		Compression anklet and separate liner included

Product Measurements

Device ID**	Resting Pressure	Working Pressure	Static Stiffness
A	41	57	16
B	42	56	14
C	42	53	11
D	55	66	11
E	40	51	11

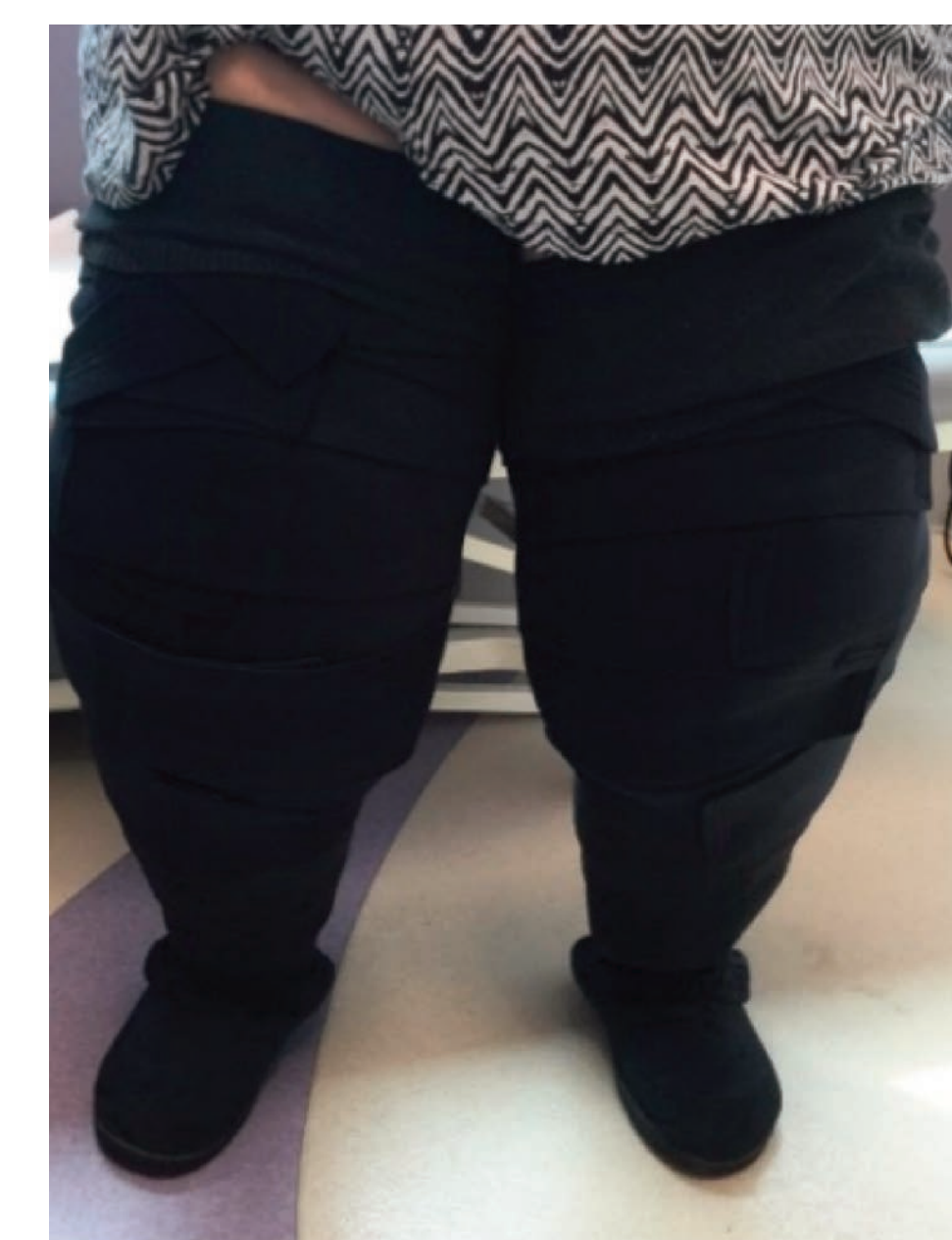
Each product was applied by a single clinician on a healthy volunteer per the manufacturer's instructions and pressure measurements documented. This task was repeated 3 times. Above represents average of three trials.



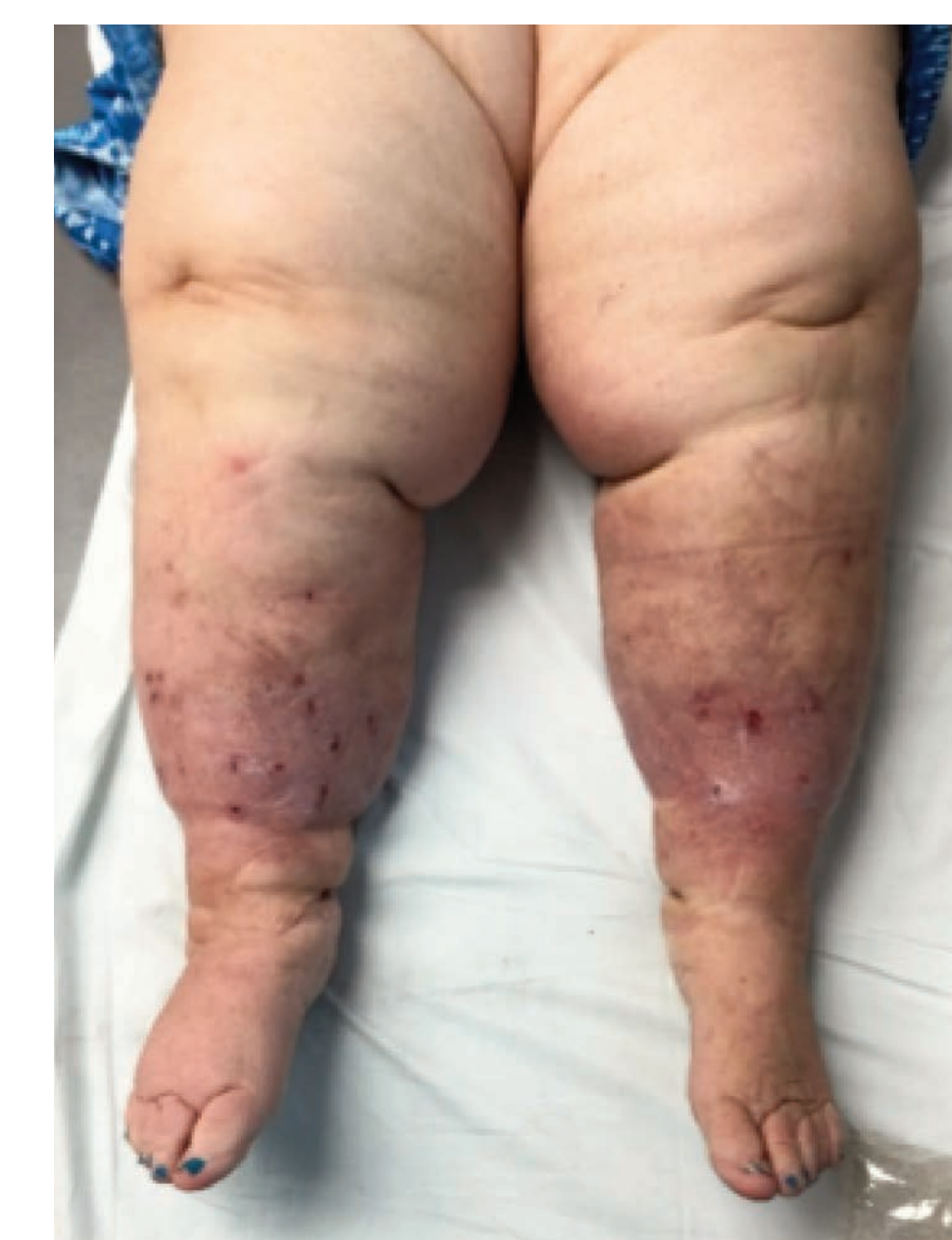
Patient with weakness one hand and unable to manage interlacing straps



Available size for thigh coverage also overlapping straps for containment for larger limb



Patient with spongy/redundant tissue – overlapping straps provided structure for better containment



Chosen due to normal shape limb, with minimal foot involvement
Patient with good dexterity able to manage 2 hand application



Chosen due to price and ease of donning in elderly patient



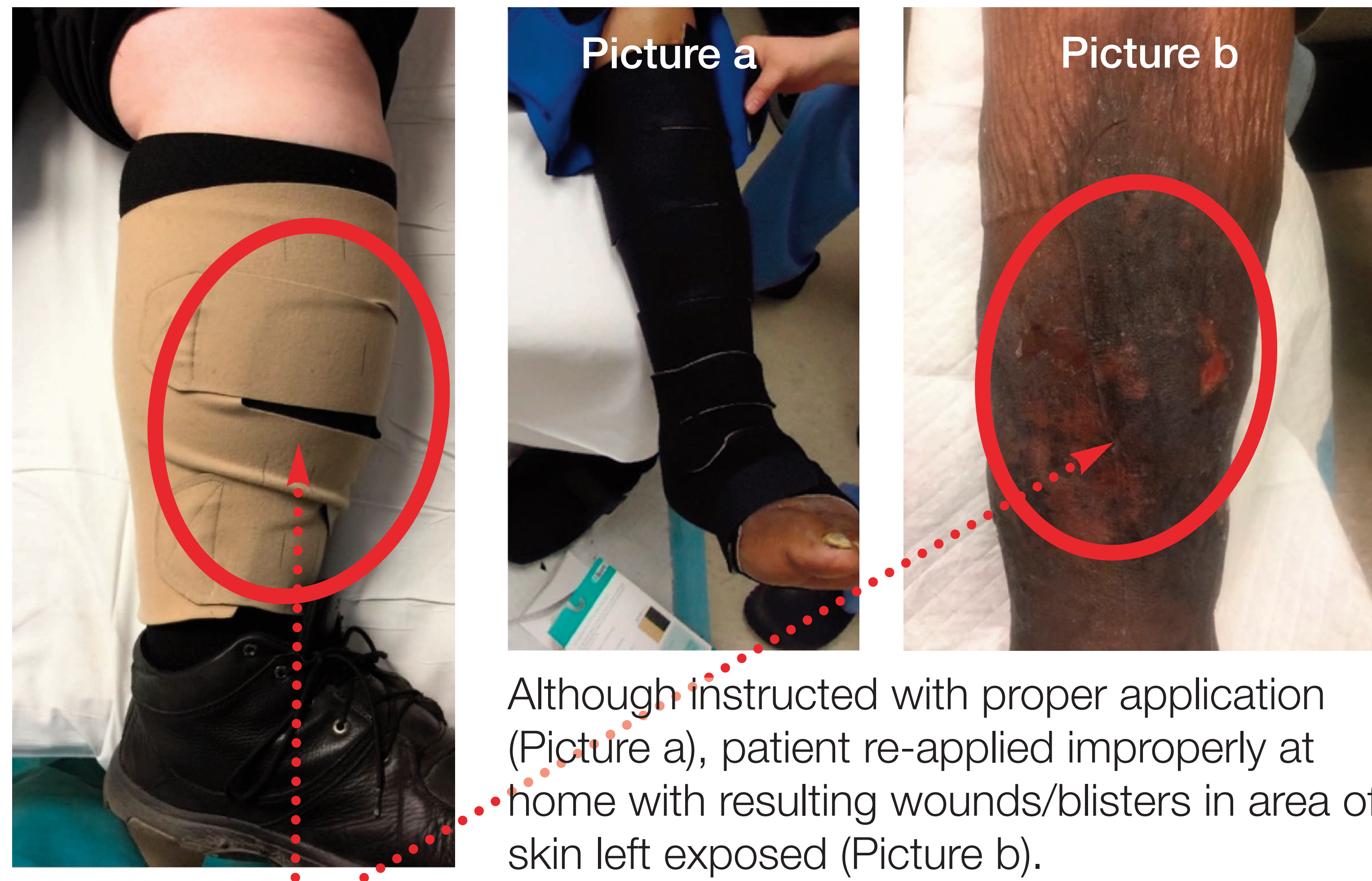
Chosen due to limb shape and presence of spine affording increased stability and ease of adjustment for all day wear



Chosen due to minimum number of straps – normal shape/size leg accommodated

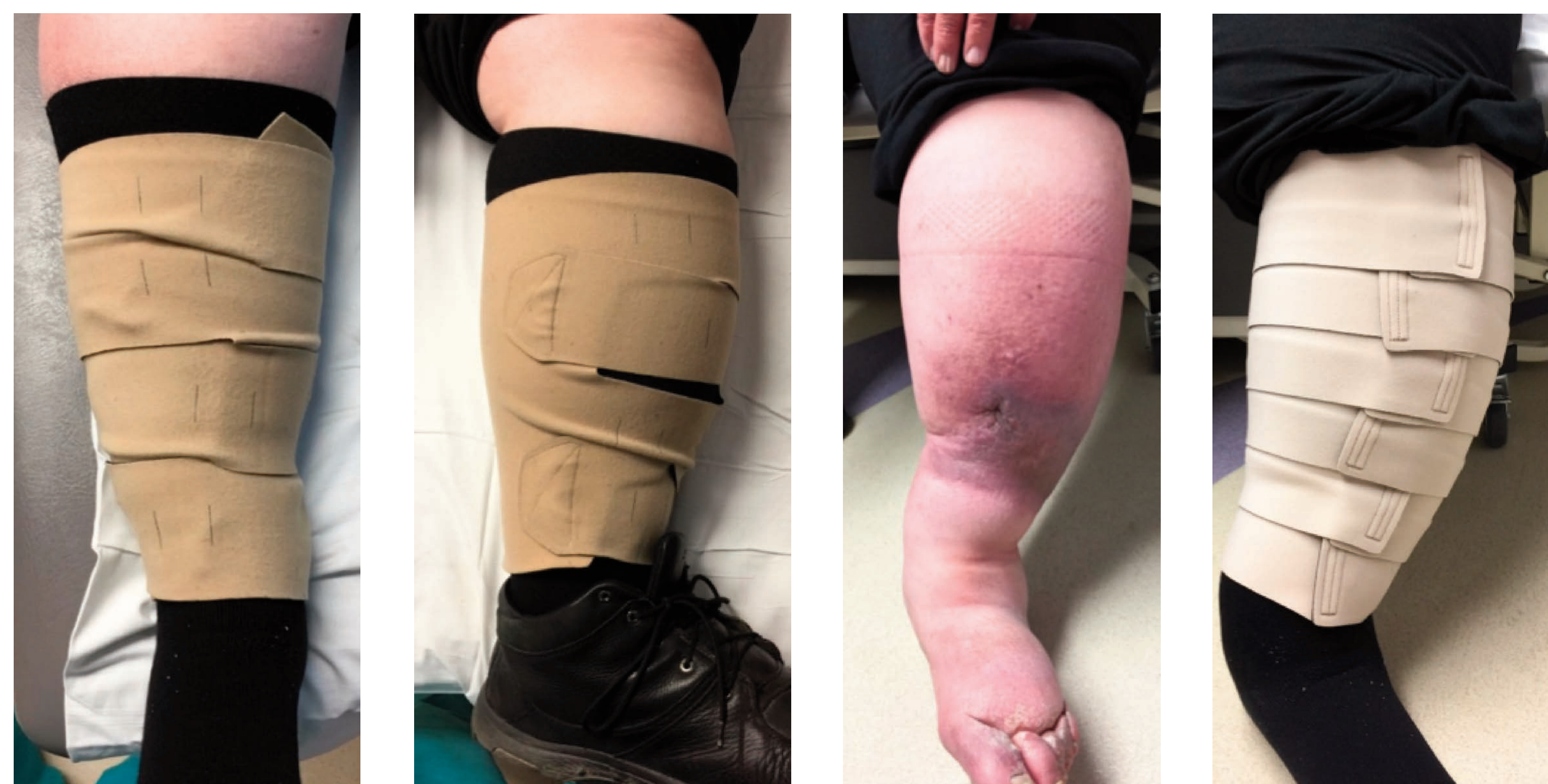
Findings from real life patient/caregiver application

Although all VELCRO® adjustable wraps has similar pressure profiles, performance in vivo varied



Although instructed with proper application (Picture a), patient re-applied improperly at home with resulting wounds/blisters in area of skin left exposed (Picture b).

Incorrectly applied, interlacing wraps have potential for further skin trauma due to gapping and areas of low pressure



Wraps that lack a vertical spine may slip and bunch with wear

Product A provided better containment with overlapping straps and posterior spine design.



1st visit post instruction



Even with less than perfect application note skin intact and even compression



2nd visit after instruction

Although not perfectly donned, there is less risk for re-ulceration with this style garment

It is essential to follow up use/care of all compression products to ensure proper use

Conclusion

Choice of VELCRO® adjustable compression wrap is patient dependent. These characteristics should be considered:

Limb size/shape

- Regularly shaped, average size limbs with minimal swelling are equally contained by all products.
- Limbs with irregular contour, excessive size, dense swelling appeared better contained by products with posterior ‘spine’ to provide vertical stability throughout the day and overlapping straps for additional containment.
- Products with overlapping straps eliminate the potential for skin trauma with exposed tissue caused by interlacing garments that may be inappropriately applied by patients/caregivers.

Tissue texture

- Limbs with marked tissue texture changes were better contained with overlapping straps which afforded additional containment.

Physical ability of patient/caregiver utilizing the product

- Products with overlapping straps minimized user application error that could impact on functional characteristics overlapping characteristics provided double coverage to prevent undue loss of pressure in all areas the overlapping straps afforded better coverage even when the patient did not perfectly apply the product.

Product Identification

Product A

ReadyWrap™
Lohmann & Rauscher

Product B

CircAid® JuxtaLite®
Medi

Product C

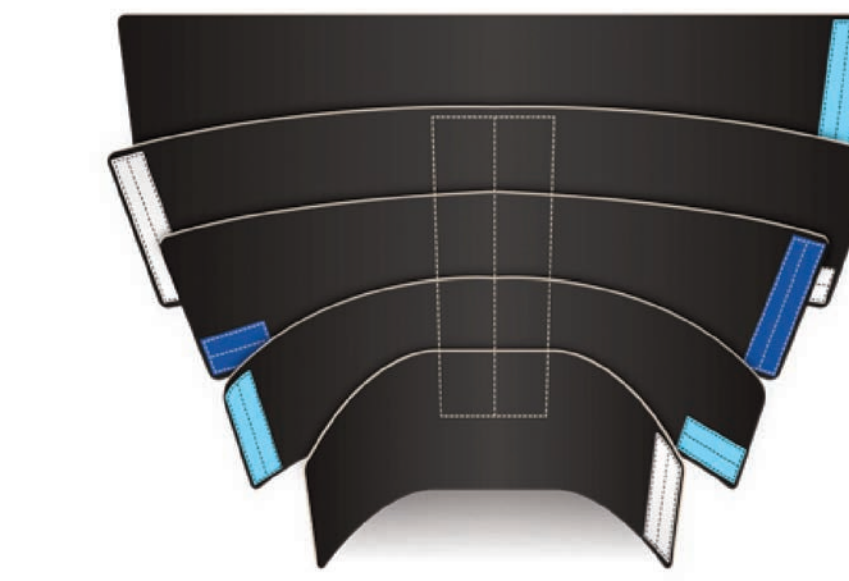
CompreFlex™ Lite
Sigvaris

Product D

FarrowWrap Lite®
Jobst®

Product E

Compression Wrap
Juzo



Product A



The authors of this case series concluded that the product with the most desired qualities, consistently, is ‘Product A’ for the patient population treated by the authors including those with chronic edema with/without wounds. The other products have good features but don’t perform consistently per the authors’ limited ‘real life’ research.

A larger study, with larger sample size, to further track specific performance characteristics, including edema management, wound healing, ease of appropriate application, and wear comfort, could maximize proper utilization of health care dollars by better matching a product to an individual patient.